5 BLOOD ANALYSIS

5.1 Whole Blood Specimens

5.1.1 All whole blood specimens will be preserved on stain cards as soon as possible after receipt. DNA typing will be conducted when appropriate.

5.1.2 The following method describes the procedure to preserve whole blood specimens on stain cards.

5.1.2.1 Safety and Other Considerations:

5.1.2.1.1 Perform the procedure in a well-ventilated area, such as in a bio-safety cabinet (preferable) or fume hood.

5.1.2.1.2 Avoid areas subject to temperature and/or humidity extremes.

5.1.2.1.3 Wear safety glasses. If the procedure is not performed in a hood where a sash separates you from the blood, wear a face shield.

5.1.2.1.4 The use of double gloves is preferable.

5.1.2.2 Supplies

5.1.2.2.1 Bloodstain cards – Whatman Catalog # WB 10 00 14 **DO NOT USE FTA CARDS.**

5.1.2.2.2 Disposable transfer pipets

5.1.2.2.3 Tissues (Kimwipes, etc.)

5.1.2.2.4 Permanent ink pen or other permanent marker

5.1.2.2.5 Biohazard disposal receptacle

5.1.2.3 Procedure

5.1.2.3.1 Describe the blood sample in notes, including any identifying information on the blood tube, as appropriate.

5.1.2.3.2 At a minimum, label the bloodstain card with the following data:

5.1.2.3.2.1 subject's name

5.1.2.3.2.2 case number

5.1.2.3.2.3 item number

5.1.2.3.2.4 date card is made

5.1.2.3.2.5 your initials

5.1.2.3.3 Mix the blood in the tube by gently inverting the tube several times.

CAUTION! When mixing post-mortem samples, take care that the stopper does not become dislodged from the top of the tube.

5.1.2.3.4 Uncap the tube so as to prevent any contaminating spatter or aerosol that may occur as the suction is broken in the tube. A Kimwipe may be useful for covering the cap while it is being twisted off of the tube.

5.1.2.3.5 Using a fresh disposable pipet for each blood sample, transfer blood from the tube to the appropriately labeled bloodstain card. Alternatively, slowly decant the liquid blood from the tube to the bloodstain card. If clotting of the sample has occurred or a red top tube was submitted, gently break up the clot (using the pipet tip, applicator sticks, etc.) before transferring the blood onto the bloodstain card. Discard any excess blood from the tube in an appropriate biohazard container.

CAUTION! Do not over-saturate the card, as drips and spill-over can occur.

5.1.2.3.6 Allow the bloodstain card to **COMPLETELY AIR DRY** before packaging it in an appropriately sealed and identified container. Allow the residual blood in the corresponding tube and the cap to air dry thoroughly before packaging in a separate container. The cards and tubes may be stored at room temperature or otherwise refrigerated or frozen.

5.1.2.3.7 If no analysis will be conducted on the sample, the case notes will indicate that sample has been preserved; the results will be reported as "this sample was not analyzed/examined".

5.2 Bloodstain Analysis

5.2.1 Working with only one item at a time to avoid sample mix-up and/or contamination, examine the item for visible red-brown staining. Describe the item and the appearance, size, and location of stains in notes, diagrams, and/or photographs, as appropriate. In instances where no stains are visible, the use of an alternate light source (ALS), ultra-violet (UV) light, and/or luminol may be helpful in locating stains. In some instances, in the absence of any visible stains, random swabbing of the item may be appropriate, depending on the item, substrate, color, other examinations requested, etc.

5.2.2 Test stain/stained area for blood, record and report results.

5.2.2.1 If "stained" swabs are submitted with corresponding "control" swabs, the "control" swabs will not be examined.

5.2.2.2 If tests on an item of evidence indicate the presence of blood, as a general rule a substrate control (an unstained area adjacent to the stain) will not be tested.

5.2.3 If appropriate, examine the stain for a possible mixture of physiological fluids (semen, urine and/or feces) and record and report results.

5.2.4 As appropriate, test the bloodstain for species origin when stain size allows and record and report results. Do not consume a sample for species origin determination if DNA analysis, which includes human DNA determination, will be performed and is more informative.

5.2.5 Assess and document the suitability of stains/stained areas for DNA PCR-based typing.

5.2.6 As appropriate, conduct DNA PCR-based typing.

5.2.6.1 Conduct DNA PCR-based typing, record results, and report results and conclusions after comparing the profile(s) obtained to the appropriate known sample profiles. If a suspect or victim is eliminated, but a potentially probative foreign profile is identified, conduct a DNA Data Bank search for a "match" to the foreign profile, and report the results of the search. However, before proceeding with the Data Bank search, it may be appropriate to discuss the probative nature of the evidence with the investigator. A Data Bank search will not be necessary if the investigator does not believe that the evidence is probative to the case. For example, the victim and suspect are eliminated as the contributor of a blood

stain on the suspect's shirt. The stain may have no probative value to the case.

5.2.6.2 Conduct DNA PCR-based typing in the absence of a suspect (no suspect case), record results, conduct a DNA Data Bank search for a "match" to a profile believed to be that of the putative perpetrator, and report the results of the search.

5.2.6.3 In the absence of all appropriate known samples, conduct DNA PCR-based typing, record results, and conduct a DNA Data Bank search for a "match" to any suitable DNA profiles that are believed to be probative to the case. Report results and request the submission of the appropriate known samples.

5.3 If appropriate, forward evidence to another section for analysis. Consult with other section examiners during analysis, as necessary.

5.4 Return evidence to the primary examiner or to security for final disposition.

♦**END**